IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:	LAURENT SCALLIE	EXAMINER:	JONES, SCOTT E.
APPLICATION NO.:	10/011,027	ART UNIT:	3713
FILED:	NOVEMBER 2, 2001		
FOR: VIRTUAL REALITY GAME SYSTEM USING PSEUDO 3D DISPLAY DRIVER			

APPEAL BRIEF (AMENDED)

Dear Sir:

In response to the Final Office Action mailed October 27, 2005, Applicant submitted a Notice of Appeal and a Pre-Appeal Brief Review Request on March 26, 2006. A Notice of Panel Decision from Pre-Appeal Brief Review was issued on June 20, 2006 (the decision incorrectly identified the date of the notice of the review request as June 5, 2006). A timely Appeal Brief was submitted on July 9, 2006. A Notification of Non-Compliant Appeal Brief was mailed on July 28, 2008. This Amended Appeal Brief is submitted within one (1) month of the Notice.

I. REAL PARTY IN INTEREST

The real party in interest is the assignee, Atlantis Cyberspace, Inc.

II. RELATED APPEALS AND INTERFERENCES

Applicant believes that there are no related appeals. However, for the sake of completeness and in an abundance of caution, Applicant notes that commonly owned US Application 10/011,023 entitled "Mission Control System for Game Playing Satellites on Network", which is incorporated by reference into the subject reference is presently on appeal. Applicant believes that US Application 10/011,023 is unrelated to, does not directly affect, is not directly affected by, and does not have any bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-5 and 7-20 are currently pending and are twice rejected under 35 U.S.C. §102(b) as being anticipated by i-O Display Systems H3D Terminator 3D Gaming Glasses

(hereinafter the "i-O Glasses"). Claim 6 is canceled.

The pending claims are attached hereto as an Appendix and all are appealed.

IV. STATUS OF AMENDMENTS

Claims 1-20 were filed in the pending application. The first Office Action was mailed March 20, 2003 rejecting all claims. A response to the first Office Action was filed on October 30, 2003 canceling claim 6. The second (FINAL) Office Action was mailed April 7, 2004 rejecting all pending claims. The application was unintentionally abandoned due to a failure to respond the second Office Action. The application was revived, and an Amendment in response to the second Office Action was filed March 24, 2005. A third Office Action was mailed October 27, 2005 rejecting all pending claims. In response to the third Office Action, a Notice of Appeal and Request for Pre-Appeal Brief Review were filed on March 26, 2006. No Amendments are pending.

V. SUMMARY OF INVENTION

Two independents claims are involved in the appeal: claims 1 and 15. The independent claims are not subject to 35 U.S.C. §112, ¶6. The subject matter defined in the independent claims is summarized below. The summary below includes cross-references to exemplary embodiments falling within the scope of the claims; however the claim is not limited to or by the embodiments described in the specification and drawings.

A. Summary of Claim 1

The invention described in claim 1 is directed to a method for operating three-dimensional (3D) application software [10] to generate a 3D stereoscopic vision display as generally depicted in figure 1A, wherein the 3D application software [10] is of the type that provides a 3D output signal to a display driver [12] for a 3D graphics rendering device [14] to generate a display output appearing to be three-dimensional for display on a two-dimensional (2D) screen display [16]. (see spec at 2:23-3:16). The method includes the steps of (a) running the application software [10] in its normal mode to generate the 3D output signal which is normally sent from the application software [10] to a display driver [12] for a 3D graphics rendering device [14] for generating a 3D display output on a 2D screen display [16] (see spec at 5:20-29); (b) intercepting the 3D output signal from the application software [10] and redirecting the 3D output signal to a pseudo driver [20], wherein the pseudo driver [20] generates from the

output signal a left image view signal and a right image view signal that is stereoscopically offset from the left image view signal (see spec at 6:1-7:23; figure 1B); and (c) the pseudo driver [20] providing the left image view signal to a first 3D graphics rendering device [24] and the right image view signal to a second 3D graphics rendering device [22], and using the first and second 3D graphics rendering devices for separately rendering in tandem left and right image views for display in a 3D stereoscopic vision display device [26] (see spec at 6:1-5 and 7:3-4).

B. Summary of Claim 15

The invention described in claim 15 is directed to a method of generating a 3D multi-view display operable with three-dimensional (3D) application software [10] of the type that provides a 3D output signal from the application software [10] to a display driver [12] for a 3D graphics rendering device [14] to generate a display output appearing to be three-dimensional on a two-dimensional (2D) screen display [16] and which makes display function calls to a native API display driver [12] to provide the 3D display output to a 2D screen display [16]. (see spec at 2:23-3:16; figure 1A) The method includes the steps of (a) running the application software [10] on a computer in its normal mode to generate a 3D output signal intended for a 2D screen display [16]; and (b) providing a pseudo 3D display driver [20] that links to the native API display driver [12] by intercepting image display function calls to the native API display driver [12] from the application software [10] and redirecting them through the pseudo 3D display driver [20] in order to generate multiple, separate image views and provide the image views to respective ones of a corresponding multiple 3D graphics rendering devices [22, 24] for a multi-view 3D display [26] (see spec at 6:1-7:23; figure 1B).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether the Examiner has met the burden of proving that claims 1-5 and 7-20 are anticipated by i-O Display Systems H3D Terminator 3D Gaming Glasses (hereinafter the "i-O Glasses").

VII. ARGUMENT

Claims 1-5 and 7-20 are currently pending and are twice rejected under 35 U.S.C. §102(b) as being anticipated by i-O Display Systems H3D Terminator 3D Gaming Glasses (hereinafter the "i-O Glasses").

A. Background

In response to the second Office Action dated April 7, 2004, which contains the same rejections as the third Office Action dated October 27, 2005, the Applicant filed a Response dated March 24, 2005 (hereinafter the "Response"). In deeming unpersuasive the arguments raised by the Applicant in the Response, the Examiner asserts that 1) "the arguments raised by the Applicant amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references", and 2) "Applicant provides an opinion about how the prior art works and an interpretation (opinion) about what the article means." Neither assertion accurately reflects the arguments set forth in the Response.

B. The Response Details Specific Claim Language Absent From The Prior Art

In the Response at pages 6-9, the Applicant details specific language in the claims that is not taught in the prior art, as well as, an explanation as to why the prior art fails to do so. For example, as explained at pages 7, 2nd full paragraph, claim 1 recites "separately rendering in tandem left and right image views for display in a 3D stereoscopic vision display device." The i-O Glasses fail to teach or suggest this element. When using the i-O Glasses, separate image views are not rendered. Only a single interlaced VGA output signal is displayed on a 2D screen like the conventional mode depicted in figure 1A (left column) of the present application. Moreover, no images are displayed on a 3D stereoscopic vision display device. Rather, the images are displayed on a 2D display device. The i-O Glasses are only used to control the viewing of the images on the 2D display device.

In other words, no images are displayed in the i-O Glasses, rather the images are displayed on a conventional 2D CRT display device that the user views through the i-O Glasses. The fact that "left and right image views" are NOT displayed in the i-O Glasses is further explained below in view of documentation provided by i-O Display Systems, the maker of i-O Glasses. To use the i-O Glasses "[y]ou must have a CRT based (picture tube) computer monitor in order to use 3D gaming glasses." (See March 26, 2006 IDS, Reference A at 2) As explained below, the Examiner must consider this reference under MPEP §2124. Again, a user of the i-O Glasses views the images on a 2D display device (e.g., a TV or computer monitor), NOT in the i-O Glasses.

Details of all of the specific claim language (identified by quotation marks) not found in the i-O Glasses is detailed in section VII.E below.

C. The Response Contains Facts Describing The Prior Art, Not Opinion

The reference relied upon by the Examiner is a vaguely worded, non-technical magazine article purportedly describing the prior art i-O Glasses. The Examiner does not rely on any technically oriented source or any documentation provided by the manufacturer of the i-O Glasses. The Examiner claims that this is appropriate under MPEP §2124.

In the Response and accompanying IDS, the Applicant provided the Examiner with the opportunity to consider such references. However, in the most recent Office Action ignores the technical references describing the i-O Glasses, which are equally applicable under MPEP §2124.

As explained in a web review by Christoph Bungert entitled "Unofficial i-O Display Systems H3D Terminator, H3D Cruiser and 'Universal' controller page" on the website http://www.stereo3d.com/terminator.htm (hereinafter "Stereo3D Review") depicting the components of the i-O Glasses, the i-O Glasses are a "shutterglass" type of device. A copy of the relevant web pages from both the original 2000 and original versions of the article were provided in connection with the IDS filed March 24, 2005 as References C and D.

A description of the i-O Glasses and LCD shutter glasses in general is found in a review and FAQ page provided by the 3D Gaming World website (http://www.3dgw.com). A copy of the relevant web pages were provided in connection with the IDS filed on March 24, 2005 as references A and B.

As described in by the 3dgw website (i.e., fact rather than opinion), the lenses of the glasses are made up of a clear LCD panel that can either pass your vision on or off for each lens. In order to see things in 3D each eye must see a slightly different picture. This is done in the real world by a person's eyes being spaced apart so each eye has its own slightly different view. The brain then puts the two pictures together to form one 3D image that has depth to it.

As further described by the 3dgw website, with LCD shutter glasses, each lens can be turned off independently. The lenses are synced via cable or wireless so when the monitor displays the image meant for the right eye, the lens of the left eye is shut off, and when the monitor is displaying the image meant for the left eye, the right eye is shut off. This switching back and forth happens very rapidly around 60 times per second which if done correctly provides a flicker free 3D Image on the monitor. There are several different methods of sending the separated views to the monitor for use with the glasses. The modes include interlacing, page flipping, sync doubling, line blanking, and anaglyph.

As described in the Bungert review, the components of the i-O Glasses include the glasses, a wired or wireless input to the glasses, and a cable (controller) for connecting the VGA card, the monitor and the glasses (either wired or IR wireless). The cable is connected either wired or wireless to the glasses so that the glasses receive the sync information necessary for controlling the lenses of the glasses. The game player then uses the glasses to view the monitor. The lenses are switched on and off in sync with the monitor to provide the game player with 3D viewing.

The above statements constitute a recitation of the teachings of the 3dgw website and Bungert review with respect to the i-O Glasses, and are thus statements of fact, not opinion.

In contrast to the technical literature cited by Applicant, the Office Action relies upon a non-technical article and a non-technical, marketing description. A comparison between the the non-technical and technical literature sheds light on the true teachings of the i-O Glasses. In particular, the Business Wire article states that "H3D software drivers working with the Z axis depth information already available in nearly any modern DirectX, Glide or OpenGL game can create a stereo 3D image pair – one image for your left eye and a slightly different image for your right eye." When this generalized statement is viewed in light of the more detailed technical references, it is clear that the H3D software drivers simply allow the lenses of the glasses to be synchronized with the monitor that displays the game. Moreover, the statement in the Business Wire article that the "H3D Terminator glasses ensure that each eye receives the proper signal" is easily subject to misinterpretation by failing to describe important details. In reality, the glasses to not display the image viewed by the game player. Rather, the glasses only control the viewing of the image on a conventional 2D display device.

D. The Manufacturer's Literature Demonstrates Claims Are Not Anticipated

While the references previously cited by the Applicant should end all doubt as to the teachings of the i-O Glasses, technical documentation available from the manufacturer of the i-O Glasses, i-O Display Systems, is provided in an IDS filed concurrently herewith. The cited technical literature is from the www.razor3donline.com webite, which is owner by Ilixco, Inc. This website is accesses from i-O Display Systems' website and according to i-O Display Systems "about us" page (http://www.i-glassesstore.com/info.html), "i-O Display Systems, LLC ("IOD") ... was formed in 1997 as a new venture between Ilixco, a privately held display technology company and Liberty Media Group."

According to i-O Display Systems, "[s]ince 1997, i-O Display Systems (Manufacturers

of the razor3d 3D glasses products) has made a variety of PC gaming and Internet Viewing products - **all based on LCD shutter glasses technology**." (See March 26, 2006 IDS, Reference A at p. 1 (emphasis added)) As further described by i-O Display Systems:

> When you view 3D content using our patented 3D glasses, the left and right images are seen clearly, one eye at a time. The way that this is achieved is by rapidly alternating the opening and closing of an LCD (liquid crystal display) lens in front of each eye. While your right eye sees the right image, the left eye is blocked by a darkened LCD lens (or shutter) and vice versa, back and forth. This alternating of images occurs many times a second and your brain fuses these separate images into one truly 3-Dimensional image. The speed of the shutters is set in direct proportion to the refresh rate of your TV or computer monitor. The wired 3D glasses remain in-sync with the image source via a connecting wire to the control box. The wireless 3D glasses accomplish this by receiving an infared signal from the control box.

(See March 26, 2006 IDS, Reference B at p. 1-2)

In addition, i-O Display Systems explains that "[y]ou must have a CRT based (picture tube) computer monitor in order to use 3D gaming glasses." (See March 26, 2006 IDS, Reference A at p. 2)

As confirmed by the technical literature of i-O Display Systems, the i-O Glasses do not teach separately rendering in tandem left and right image views for display in a 3D stereoscopic vision display device as recited in claims 1 and 15. No images are displayed in the i-O Glasses, rather the images are displayed on a conventional 2D CRT display device that the user views through the i-O Glasses. The fact that "left and right image views" are NOT displayed in the i-O Glasses is further explained below in view of documentation provided by i-O Display Systems, the maker of i-O Glasses. To use the i-O Glasses "[y]ou must have a CRT based (picture tube) computer monitor in order to use 3D gaming glasses." (See March 26, 2006 IDS, Reference A at p. 1) "Without the glasses, you would see a blurry double view of both images, one on top of the other." (See March 26, 2006 IDS, Reference B at p. 1).

Moreover, as recited in claim 1, the left and right image views are for display in a 3D stereoscopic vision display device. Claim 15 recites providing the image views to respective one of a corresponding multiple 3D graphics rendering devices for a multi-view 3D display. As explained in the references cited in both the current and prior IDS, the i-O Glasses are NOT a display. The i-O Glasses are simply a device though which a conventional 2D display device is viewed. Thus, the i-O Glasses fail to teach the "display device" recited in any of the pending

claims.

E. The Examiner Fails To Present A Prima Facie Case Of Anticipation

The characterization of the prior art in the Office Actions is contradicted by technical literature and documentation from the maker of the prior art device. As such, the non-technical literature relied upon in the Office Action fails to provide sufficient evidence as to the teachings of the i-Glasses to support the rejection under 35 U.S.C. §102(b).

Moreover, the Office Actions provide no more than paraphrasing of the prior art without demonstration of where each and every claim element is found in the prior art. This is particularly evident with respect to the dependant claims where there is no mention anywhere in the relied upon references of the recited claim language. Recitation of the specific claim language not found in the relied upon references is detailed below and demonstrates the failure of the Examiner to set forth a prima facie case of anticipation of any of the pending claims.

Claim 1 recites "intercepting the 3D output signal from the application software and redirecting said 3D output signal to a pseudo driver, wherein said pseudo driver generates from said output signal a left image view signal and a right image view signal that is stereoscopically offset from the left image view signal." The i-O Glasses fail to teach or suggest this element. The drivers used with the i-O Glasses do not generate a left image view signal and a right image view signal. Rather, when using the i-O Glasses, the drivers produce a single interlaced signal.

Also, claim 1 recites "providing said left image view signal to a first 3D graphics rendering device and said right image view signal to a second 3D graphics rendering device." The i-O Glasses fail to teach or suggest this element. Rather, the i-O Glasses provide the left and right images to a single device.

Additionally, claim 1 recites "separately rendering in tandem left and right image views for display in a 3D stereoscopic vision display device." The i-O Glasses fail to teach or suggest this element. When using the i-O Glasses, separate image views are not rendered. Only a single interlaced VGA output signal is displayed on a 2D screen like the conventional mode depicted in the left column of figure 1A of the present application. Moreover, no images are displayed on a 3D stereoscopic vision display device. Rather, the images are displayed on a 2D display device. The i-O Glasses are only used to control the viewing of the images on the 2D display device.

As for the dependent claims, all are allowable given the failure of the i-O Glasses to anticipate the independent claim. Additionally, the i-O Glasses fail to teach the elements of the dependent claims as well, examples of which are discussed below.

Claim 2 recites a 3D stereoscopic vision display device. As explained with respect to claim 1, the i-O Glasses are not such a device.

Claim 4 recites that "the intercepting and redirecting of the 3D game data is obtained by providing a wrapper for the game software's native API display driver and replacing with stereoscopic pseudo driver display function calls linked under the same name as the game software's native API display driver for a 2D display." The i-O glasses provide no such teaching and make no mention of how the H3D software drivers gather the Z axis depth information from the API.

Claim 5 recites the native API formats supported by the wrapper. As discussed with respect to claim 1, the i-O Glasses do not teach use of a wrapper.

Claim 7 recites "the pseudo driver generates a 3D stereoscopic vision display using one physical graphics card with dual graphics generator card heads for separately rendering right and left image view for the 3D stereoscopic vision display." The documents associated with the i-O Glasses do not discuss dual graphics generator card heads.

Claim 10 recites "the intercepted 3D game data is combined with other 3D content using a mixer and a dual rendering system." The documents associated with the i-O Glasses do not discuss using either a mixer or a dual rendering system.

Claim 12 recites "another pseudo driver operates on the 3D game data in tandem with the pseudo 3D display driver." The i-O Glasses do not teach use of the recited pseudo driver let alone two pseudo 3D display drivers operating in tandem.

Claim 13 recites "the other pseudo driver is a stereo sound or a directional force feedback driver." The i-O Glasses do not teach use of the recited pseudo driver let alone one which is a stereo sound or directional force driver.

Turning to the other independent claim, claim 15 recites "providing a pseudo 3D display driver that links to the native API display driver by intercepting image display function calls to the native API display driver from the application software and redirecting them through the pseudo 3D display driver in order to generate multiple, separate image views." The i-O Glasses fail to teach or suggest this element. The drivers used with the i-O Glasses do not generate separate image views. Rather, when using the i-O Glasses, the drivers produce a single interlaced signal that is displayed on a 2D screen like the conventional mode depicted in the left column of figure 1A of the present application.

Also, claim 15 recites "provide the image views to respective ones of a corresponding multiple 3D graphics rendering devices for a multi-view 3D display." The i-O Glasses fail to

teach or suggest this element. The documents describing the i-O Glasses discuss providing the images to a single device (a single VGA card). Moreover, no images are displayed on a multi-view 3D display. Rather, the images are displayed on a 2D display device. The i-O Glasses are only used to control the viewing of the images on the 2D display device.

As for the dependent claims, all are allowable given the failure of the i-O Glasses to anticipate the independent claim. Additionally, the i-O Glasses fail to teach the elements of the dependent claims as well, examples of which are discussed below.

Claim 16 recites a 3D multi-view display. As explained with respect to claim 15, the i-O Glasses are not such a device.

Claim 19 recites "the pseudo 3D display driver generates right and left eye image views, and provides them to respective right and left graphics rendering devices in parallel for converting the right and left eye views into right and left image display outputs, respectively, which are used for a 3D stereoscopic vision display." The i-O Glasses fail to teach or suggest this element. The drivers used with the i-O Glasses do not generate a left image view signal and a right image view signal. Rather, when using the i-O Glasses, the drivers produce a single interlaced signal. Moreover, when using the i-O Glasses there are no right and left image display outputs. Rather, there is a single interlaced VGA signal output to a 2D display.

Claim 20 recites "including separate graphics generator cards for rendering the right and left image views in parallel for the 3D stereoscopic vision display." The i-O Glasses fail to teach or suggest this element. The documents describing the i-O Glasses discuss only a single VGA card and the i-O Glasses are configured for receiving input from a single VGA card only.

Thus, the Examiner has failed to demonstrate a prima facie case of anticipation based upon the i-O Glasses.

III. Conclusion

In light of the above arguments, Applicant respectfully submits that the pending claims are allowable.

Respectfully submitted,

DATE: August 5, 2006

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APPENDIX OF CLAIMS

Claim 1. (Previously presented) A method for operating three-dimensional (3D) application software to generate a 3D stereoscopic vision display, wherein the 3D application software is of the type that provides a 3D output signal to a display driver for a 3D graphics rendering device to generate a display output appearing to be three-dimensional for display on a two-dimensional (2D) screen display, comprising:

(a) running the application software in its normal mode to generate the 3D output signal which is normally sent from the application software to a display driver for a 3D graphics rendering device for generating a 3D display output on a 2D screen display;

(b) intercepting the 3D output signal from the application software and redirecting said 3D output signal to a pseudo driver, wherein said pseudo driver generates from said output signal a left image view signal and a right image view signal that is stereoscopically offset from the left image view signal; and

(c) said pseudo driver providing said left image view signal to a first 3D graphics rendering device and said right image view signal to a second 3D graphics rendering device, and using said first and second 3D graphics rendering devices for separately rendering in tandem left and right image views for display in a 3D stereoscopic vision display device.

Claim 2. (Previously presented) A method according to claim 1, wherein the 3D stereoscopic vision display device is selected from the group consisting of head-mounted "stereo vision" goggles, head-mounted 3D display device, and a stereo vision monitor.

Claim 3. (Original) A method according to claim 1, wherein the 3D application software is a 3D video game software which provides 3D game data output.

Claim 4. (Previously presented) A method according to claim 3, wherein the intercepting and redirecting of the 3D game data is obtained by providing a wrapper for the game software's native API display driver and replacing with stereoscopic pseudo driver display function calls linked under the same name as the game software's native API display driver for a 2D display.

Claim 5. (Original) A method according to claim 4, wherein the wrapper supports a selected one of the following group of native API formats: Glide: OpenGL; and DirectX.

Claim 6. (Canceled)

Claim 7. (Previously presented) A method according to claim 1, wherein the pseudo driver generates a 3D stereoscopic vision display using one physical graphics card with dual graphics generator card heads for separately rendering right and left image view for the 3D stereoscopic vision display.

Claim 8. (Original) A method according to claim 3, wherein the intercepted 3D game data is stored in a 3D data recorder for later play back.

Claim 9. (Original) A method according to claim 8, wherein the recorded 3D game data are transmitted or downloaded through an online interface to a remote user.

Claim 10. (Original) A method according to claim 3, wherein the intercepted 3D game data is combined with other 3D content using a mixer and a dual rendering system.

Claim 11. (Original) A method according to claim 10, wherein the dual rendering system is kept running while switching between different game software.

Claim 12. (Original) A method according to claim 3, wherein another pseudo driver operates on the 3D game data in tandem with the pseudo 3D display driver.

Claim 13. (Original) A method according to claim 12, wherein the other pseudo driver is a stereo sound or a directional force feedback driver.

Claim 14. (Original) A method according to claim 12, wherein the video game software is run with one or more tracking devices for input from the player.

Claim 15. (Previously presented) A method of generating a 3D multi-view display operable with three-dimensional (3D) application software of the type that provides a 3D output signal from the application software to a display driver for a 3D graphics rendering device to generate a display output appearing to be three-dimensional on a two-dimensional (2D) screen display and which makes display function calls to a native API display driver to provide the 3D display output to a 2D screen display, comprising:

(a) running the application software on a computer in its normal mode to generate a 3D output signal intended for a 2D screen display;

(b) providing a pseudo 3D display driver that links to the native API display driver by intercepting image display function calls to the native API display driver from the application software and redirecting them through the pseudo 3D display driver in order to generate multiple, separate image views and provide the image views to respective ones of a corresponding multiple 3D graphics rendering devices for a multi-view 3D display.

Claim 16. (Previously presented) A 3D multi-view display method according to claim 15, wherein the 3D multi-view display is selected from the group consisting of head-mounted "stereo vision" goggles, head-mounted 3D display device, and a stereo vision monitor.

Claim 17. (Previously presented) A 3D multi-view display method according to claim 15, wherein the 3D application software is a 3D video game software which provides 3D game data output.

Claim 18. (Previously presented) A 3D multi-view display method according to claim 17, wherein the pseudo 3D display driver supports a selected one of the following group of native API formats: Glide; OpenGL; and DirectX.

Claim 19. (Previously presented) A 3D multi-view display method according to claim 15, wherein the pseudo 3D display driver generates right and left eye image views, and provides them to respective right and left graphics rendering devices in parallel for converting the right and left eye views into right and left image display outputs, respectively, which are used for a 3D stereoscopic vision display.

Claim 20. (Previously presented) A 3D multi-view display method according to claim 19, further including separate graphics generator cards for rendering the right and left image views in parallel for the 3D stereoscopic vision display.

EVIDENCE APPENDIX

On August 14, 2003, Applicant filed an Affidavit of David Paull under 37 CFR 1.132 along with a corresponding Amendment in response to the March 20, 2003 Office Action. A copy is reproduced below:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

---: Atty Dkt#: ATL-P1

In Re U.S. Patent Application Of :

SCALLIE, BOUTELIER : Examiner: Jones, Scott E.

Serial No.: 10/011,027 : Group No: 3713

Filing Date: November 2, 2001 :

Title: VIRTUAL REALITY GAME SYSTEM USING PSEUDO 3D DISPLAY DRIVER :

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AFFIDAVIT OF DAVID PAULL UNDER 37 C.F.R. 132

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

The undersigned, DAVID PAULL, declares as follows:

1. I received my technical training in computer graphics application programming and have an extensive background and experience in this field. I am a software programming consultant to Atlantis Cyberspace, Inc., the assignee of patent rights to the above-identified U.S. Patent Application, and have worked with the named inventors on the invention subject matter of this Application. I submit this Affidavit in support of the patentability of the claims pending before the Examiner in this case.

Patent Application Claims

2. The invention sought to be patented is defined in main Claims 1 and 15, which are amended concurrently herewith to read as follows:

Claim 1:

A method for operating three-dimensional (3D) application software to generate a 3D stereoscopic vision display, wherein the 3D application software is of the type that provides a 3D output signal to a display driver for a 3D graphics rendering device to generate a display output appearing to be three-dimensional for display on a two-dimensional (2D) screen display, comprising:

(a) running the application software in its normal mode to generate the 3D output image signal which is normally sent from the application software to a display driver to a 3D graphics rendering device for generating a 3D display output on a 2D screen display;

(b) intercepting the 3D output signal from the application software and redirecting it to a pseudo driver, wherein said pseudo driver generates from said output signal a left image view signal and a right image view signal that is stereoscopically offset from said right image view signal; and

(c) said pseudo driver providing said left image view signal to a first 3D graphics rendering device and said right image view signal to a second 3D graphics rendering device, and using said first and second 3D graphics rendering devices for separately rendering in tandem left and right image views for display in a 3D stereoscopic vision display device.

Claim 15:

A method of generating a 3D multi-view display operable with three-dimensional (3D) application software of the type that provides a 3D output signal from the application software to a display driver to a 3D graphics rendering device to generate a display output appearing to be three-dimensional on a two-dimensional (2D) screen display and which makes display function calls to a native API display driver to provide the 3D display output to a 2D screen display, comprising:

(a) running the application software on a computer in its normal mode to generate the 3D output signal intended for a 2D screen display;

(b) providing a pseudo 3D display driver that links to the native API display driver for intercepting display function calls to the native API display driver from the application

software and redirecting them through the pseudo 3D display driver in order to generate multiple, separate image views and provide them to respective ones of a corresponding multiple of 3D graphics rendering devices for generating a multi-view 3D display.

Subject Matter Disclosed in the Prior Art

3. Claims 1-20 have been rejected in the Office Action dated March 20, 2003, as unpatentable over the Applicant's own disclosure of prior 3D image display systems such as those offered by nVidia, (dated Year 2000) which enable 3D stereoscopic vision goggles to be operated with standard 3D video games.

4. Stereovision drivers were standardized by nVidia when they released the 10.5 drivers which were the first to include stereovision capabilities. Because nVidia at that time controlled the consumer market, users accepted nVidia approach of using a single cable delivering an interlaced, or pageflipped, stereo image signal. That is, the nVidia display driver generated both the left and right images on a single video generator card sequentially. The two images were then either interlaced, or pageflipped (l,r,l,r,l....), to allow the 2 interlaced images to be sent as a single signal over the same cable. At that time, 2000, most standard computers had only a single 2D monitor, so the nVidia approach was to send the 2 interlaced images to a single video graphics generator card for the 2D monitor. NVidia created their 10.5 drivers for the low end (not the high end) market, and therefore the 2 interlaced images were sent to a single graphics generator card to generate both image display outputs for the left and right eyes of nVidia's relatively inexpensive ($100) LCD Glasses in which each eye has a filter for a respective one of the two interlaced images sent in the single VGA output. The nVidia stereovision drivers were only compatible with an nVidia-based 3D graphics rendering device.

5. At this same time there were high-end stereovision head mounted displays (HMDs) which were not compatible with nVidia's driver. The HMDs required 2 seperate VGA inputs, one per eye. These HMDs employed two separate computers and specialized software to synchronize them, or two separate 3D graphics rendering devices on a single computer, however,

this method required the original 3D application software to be rewritten to support 2 VGA inputs to the HMD directly. (The Applicant's pseudo driver approach allows for any 3D application software to be made compatible with any 3D graphics rendering devices and any 2-VGA-input HMD without rewriting.) The prior approach resulted in HMDs being rarely used, except for universities, and wealthy research departments. The HMDs were in an entirely different market segment from nVidia, and were not compatible with the nVidia driver which outputted only a single VGA signal rendered by one graphics card.

Non-Obviousness of the Claimed Invention Subject Matter

6. The Applicant in the present U.S. Patent Application, which is based on a provisional filing date of November 2, 2000, is believed to be the first to realize the advantage of operating a 3D stereoscopic vision device from standard 2D-display-based games by intercepting the native API signal intended for the standard 2D display device and substituting a pseudo driver that generated separate right and left image viewpoint signals and delivered them to two video graphics generators (cards) in a single computer to render two VGA stereovision outputs for use with HMDs, as defined in amended Claim 1. The idea was also expanded to include a dualhead, or triplehead card in which a single video card has multiple rendering graphics generators, and can therefore provide the multiple VGA outputs. The Applicant's pseudo driver approach allows for any standard game software application to be made compatible with high end 2-VGA HMDs (and other high end multi-input display device), such as used in virtual reality or arcade type systems, or even on any standard personal computer.

7. The Applicant developed a generic way (compatible with different 3D application software) to upgrade any standard (2D monovision) game software application to generate multiple views on multiple rendering devices. More specifically, the Applicant's pseudo driver takes control of the game output rendering process so that it can produce the right and left image viewpoints required by high-end stereovision devices. A stereovision image is formed by two separate images to be displayed to the eyes in which the viewpoints are separated spatially by a small offset amount, just like the eyes, in order to produce a stereoscopic effect.

The Applicant's pseudo driver effectively upgrades the standard game software application to be compatible with a high-end stereovision device that it was previously incompatible with. The pseudo driver renders each viewpoint simultaneously on either multiple video cards, or a single card with multiple devices. Therefore, the pseudo driver incurs no extra time penalty when compared to the nVidia mode of providing two sequentially rendered, interlaced images in one signal to one video card for LCD shutter glasses.

8. The Applicant's pseudo driver can create any viewpoint on any of multiple displays, using the game's own image display data and rendering engine. In a non-obtrusive way, the pseudo driver changes the view, and projection matrices which control the games viewpoint. This is a single place where the pseudo driver can take control of the visuals. Now the pseudo driver can change the position of the virtual camera, in the virtual world. It can also alter the properties of the virtual camera to allow for widescreen for example. For example, The virtual camera's projection matrix, of any game, could be altered to deliver 16:9 aspect ratio. No other data in the game has to be altered. Real world applications include moving the viewpoint for stereovision rendering, and rotating the viewpoint to render accurate triplehead views.

9. The Applicant's approach to using the pseudo driver to generate two separate image display outputs to be rendered by two separate video graphics generators (cards), as defined in amended Claim 15, is also distinguishable from VR Standard VR Caddy driver. VRCaddy is like the nVidia driver in that they also render the left, and then the right images, sequentially, and then output the images as a interlaced, or page flipped, single VGA signal. In contrast, the Applicant's pseudo driver renders the left, and right (or any number of) images simultaneously, if multiple rendering devices are available.

10. The Applicant's pseudo 3D driver system can be used to update any 3D application to render n separate views on n separate rendering devices, beyond the right and left views for a stereovision device. For example, the pseudo driver can be used in the same way to drive triplehead or multihead functionality. The pseudo driver is a high level API driver, and it is

compatible with all capable video cards, which includes triplehead, and multihead cards from other manufacturers. The pseudo driver can handle any configuration of n (any number) rendering devices, which then drive n image displays.

Example of Multi-View Display

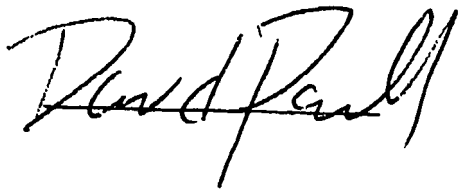
The normal drivers for a 10-view video wall assumes that the user has a single video card, and the 1600x1280 image is stretched to span all the monitors using external hardware. This results in a "aspect ratio" distorted, pixilated image. However, using the applicants pseudo driver, the user can directly drive the 10 VGA signals simultaneously using 10 PCI video cards(or 5 dualhead cards) inside a single computer. This allows a normal 3D game to drive all 10 monitors, each with a correct view, and projection matrix to allow for correct surround vision, simultaneously, on all the available video cards. The Applicants pseudo driver allows each monitor to run in the maximum allowable resolution, typically 1600x1280, allowing for a unprecedented total resolution of 8000x2560.

12. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

AFFIANT: DAVID PAULL

Dated: July 16 2003

At: _____



RELATED APPEALS APPENDIX

None is required.